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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,048	07/28/2003	Min-Chuan Wu	TOP 301	4037
23995	7590	12/16/2005	EXAMINER	
RABIN & Berdo, PC 1101 14TH STREET, NW SUITE 500 WASHINGTON, DC 20005			HANNON, CHRISTIAN A	
			ART UNIT	PAPER NUMBER
			2685	

DATE MAILED: 12/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/628,048	<b>Applicant(s)</b> WU ET AL.	
	<b>Examiner</b> Christian A. Hannon	<b>Art Unit</b> 2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the connection between the mixer and the ports IA & IB in Figure 3 as described in the specification on page 5, lines 12-14. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

2. The disclosure is objected to because of the following informalities: on page 5, line 23, "capacitor 10" should read "capacitor C10", in order to correctly correspond with the drawing.

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 9, 10, 11-14 & 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saw et al (US 5,835,990), herein Saw, in view of Gilbert (US 5,826,182) and further in view of Boubouleix (US 4,317,230).

Regarding claims 1, 9-11 & 19 Saw teaches a super-heterodyne transceiver, comprising a front end circuit comprising a double balanced mixer outputting a differential signal (Figure 1, Item 14; Figure 1, Item 28; Column 4, Lines 9-25; Saw) a transformer having primary and secondary side, wherein two input terminals are for receiving the signal, and the secondary side has an output terminal (Figure 1, Item 16; Figure 1, Item 26; Column 4, Lines 9-25; Saw) and a surface acoustic wave (SAW) filter

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having an input terminal coupled to the output terminal of the secondary side, and an output terminal (Figure 1, Item 18; Figure 1, Item 24; Column 4, Lines 9-25; Saw).

However, Saw fails to explicitly teach that the front end circuit (double balanced mixer) comprises a differential pair of transistors. Gilbert teaches that a double balanced mixer (shown in Saw), commonly referred to as a Gilbert cell mixer, is well known to have a differential pair of transistors (Column 1, Lines 66-67; Column 2, Lines 1-5; Gilbert). It would have been obvious to combine the teachings of Gilbert and Saw since the teachings of Saw are obviously a subset of the teachings of Gilbert. However Saw and Gilbert still fail to teach that the primary side of the transformer has a tap coupled to ground. Boubouleix teaches a primary side of a transformer coupled to ground (Figure 1, Item 14; Column 2, Lines 29-34; Boubouleix). It would have been obvious to combine the teachings of Boubouleix with those of Saw and Gilbert in order to strengthen the signal transfer of the primary winding to the secondary winding. In addition claim 9 recites that the front end circuit comprises a mixer with an output terminal as the differential pair of the front end circuit, which has herein been previously shown from the teachings of Saw and Gilbert. Furthermore claims 10 and 19 are in reference to the front end circuit comprising a Gilbert Cell which has been taught in the aforementioned teachings of Gilbert and Saw, and are therefore similarly rejected. It is also noted that claim 11 reads verbatim to claim 1 with the addition of the front end circuit including a mixer, which again, has been herein shown and is thusly rejected on the same grounds.

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circuit having an input terminal coupled to the output terminal of the surface acoustic wave filter (Figure 1, Item 32; Saw). Claim 12 reads verbatim to claim 2 and is rejected on the same grounds.

In regards to claims 3 & 13 the teachings of Saw, Gilbert and Boubouleix teach the superhet transceiver of claim 1, and in addition wherein the reactance of the input terminal of the SAW filter is essentially capacitive. It is obvious to one of ordinary skill in the art that a SAW filter such as that shown by Saw (Figure 1; Items 18 & 24; Saw) is comprises of passive components and in practice those components are capacitors, therefore it would be obvious that the reactance of the input terminal of the saw filter is essentially capacitive. Claim 13 reads verbatim and is similarly rejected.

With regards to claims 4 & 14 the teachings of Saw, Gilbert and Boubouleix teach the superhet transceiver of claim 1, and in addition wherein the reactance of the output terminal of the secondary side of the transformer is essentially inductive. As shown in Saw (Figure 1, Items 16 & 26), and commonly known in the art a transformer is made comprising inductors, therefore it obviously follows that the reactance of the output terminal of the secondary side of the transformer is essentially inductive.

5. Claims 5 & 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saw in view of Gilbert and further in view of Boubouleix as applied to claims 1-4, 9, 10, 11-14 & 19 above, and still further in view of Wignot et al (US 5,285,179), herein Wignot.

In regards to claims 5 & 15, Saw, Gilbert and Boubouleix teach the superhet transceiver of claim 1, however they all fail to teach a matching circuit coupled between

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the output terminal of the secondary side of the transformer and the input terminal of the SAW filter. Wignot teaches a matching circuit coupled between the output terminal of the secondary side of the transformer and the input terminal of the SAW filter (Column 2, Lines 19-23; Wignot). It would have been obvious to combine the teachings of Saw Gilbert and Boubouleix with that of Wignot in order to properly match the impedances of the two sides of the circuit. Furthermore claim 15 reads verbatim to claim 5 and is similarly rejected.

6. Claims 6 & 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saw in view of Gilbert and further in view of Boubouleix and further still in view of Wignot as applied to claims 5 & 15 above, and yet still further in view of Long (US 6,026,286).

Regarding claims 6 & 16, Saw, Gilbert and Boubouleix teach the superhet transceiver of claim 1, however they all fail to teach a LC matching network coupled between the output terminal of the secondary side of the transformer and the input terminal of the secondary side of the transformer and the input terminal of the SAW filter. As shown through Wignot a matching circuit is also an obvious combination of the aforementioned references, however Wignot does not specify an LC matching network. Long teaches a LC matching network coupled between the output terminal of the secondary side of the transformer and the input terminal of the secondary side of the transformer and the input terminal of the SAW filter (Column 12, Lines 37-42; Long). It would have been obvious to modify the teachings of Saw, Gilbert, Boubouleix and Wignot, in order to include an LC matching network in order to gain the benefit of

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lessened power consumption by using passive components in the matching network.

Claim 16 is rejected similarly as it reads verbatim to claim 6.

7. Claims 7 & 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saw in view of Gilbert and further in view of Boubouleix as applied to claims 1-4, 9, 10, 11-14 & 19 above, and further in view of Piro et al (US 6,871,059), herein Piro.

Regarding claims 7 & 17 Saw, Gilbert and Boubouleix teach the superhet transceiver of claim 1, however they all fail to teach that the tap of the primary side of the transformer couples to the ground through a capacitor. However Piro teaches that the tap of the primary side of the transformer couples to the ground through a capacitor (Column 4, Lines 51-55; Piro). It would have been obvious to combine the teachings of Saw, Gilbert and Boubouleix, to include those of Piro in order to suppress spurious noise through use of a capacitor. Claim 17 is similarly rejected as it reads verbatim to claim 7.

8. Claims 8 & 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saw in view of Gilbert and further in view of Boubouleix as applied to claims 1-4, 9, 10, 11-14 & 19 above, and further in view of Peterson et al (5,087,893), herein Peterson.

With regards to claims 8 & 18 Saw, Gilbert and Boubouleix teach the superhet transceiver of claim 1, however they all fail to teach the tap of the primary side of the transformer couples to a DC bias voltage through a resistor. Peterson teaches the use of a tap on a transformer coupled to a DC bias voltage through a resistor (Column 2, Lines 46-50; Peterson). While Peterson specifies use of the tap on the secondary side of the transformer the benefits of the teachings can be applied to either side. It would

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have been obvious to combine the teachings of Saw, Gilbert and Boubouleix, to include those of Peterson in order to bias the primary winding of the transformer. Furthermore claim 18 reads verbatim to claim 8 and is similarly rejected.

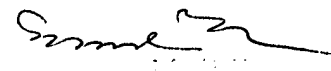
### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian A. Hannon whose telephone number is (571) 272-7385. The examiner can normally be reached on Mon. - Fri. 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Christian A. Hannon  
December 9, 2005

  
Samuel  
December 9, 2005